

REMARKS

Applicants have amended claim 1 and cancelled claims 4, 5, and 16-21 to more particularly point out the subject matter which they regard as their invention. In claim 1, the recited thermal acid generator has been limited to 2-hydroxycyclohexyl toluenesulfonate. Support for this limitation can be found in the Specification on page 9, line 16. No new matter has been introduced.

Claims 1-3 and 6-15 are pending. Applicants respectfully request that the Examiner reconsider this application, as amended, in view of the following remarks.

Rejection under 35 U.S.C. § 102

The Examiner rejects claims 1, 2, and 6-21 on various grounds. Applicants will traverse these grounds below:

First, the Examiner rejects claims 1, 2, and 6-15 as being anticipated by Pavelchek et al., US 6,767,689 (Pavelchek). Claim 1, the only independent claim, will be discussed first.

Claim 1, as amended, covers a composition containing (i) a crosslinking agent, (ii) a light absorbing agent, (iii) a thermal acid generator, and (iv) an adhesivity enhancer. The light absorbing agent is an anthracene-containing polymer and the adhesivity enhancer is polyvinylphenol. In other words, claim 1 requires both an anthracene-containing polymer and polyvinylphenol.

Pavelchek discloses an antireflective composition containing (i) a crosslinking agent, (ii) a light absorbing agent, (iii) a thermal acid generator, and (iv) an organosilicon polymer. See column 2, line 65 through column 3, line 3. This reference further teaches that the light absorbing agent can be an anthracene-containing polymer (column 6, lines 49-51) or a resin binder having an absorbing chromophore, e.g., polyvinylphenol (column 7, lines 13-21).

Based on the fact that both an anthracene-containing polymer and polyvinylphenol are disclosed in Pavelchek, the Examiner contends that a composition containing both components is also disclosed in this reference. See the Office Action, page 2, lines 23-27. He proceeds to conclude that Pavelchek anticipates claim 1.

Applicants would like to bring to the Examiner's attention that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); emphasis added. Pavelchek does not teach, either expressly or inherently, including in a composition both an anthracene-containing polymer and polyvinylphenol. Indeed, it is clear from the context that either an anthracene-containing polymer or polyvinylphenol is used as a light absorbing agent in the Pavelchek's composition. Clearly, the Examiner errs in asserting that Pavelchek discloses a composition containing both an anthracene-containing polymer and polyvinylphenol. As Pavelchek does not teach a composition containing both an anthracene-containing polymer and polyvinylphenol as required by claim 1, it fails to disclose each and every element as set forth in claim 1. In other words, it does not anticipate claim 1.

In addition, claim 1 can be distinguished from Pavelchek on a second, independent ground.

Claim 1, as amended, requires that the thermal acid generator be 2-hydroxycyclohexyl toluenesulfonate, which is a compound, not a salt.

Pavelchek teaches use of an ionic thermal acid generator, e.g., toluenesulfonate acid amine salt. See column 2, lines 23-28. Nowhere in this reference is a thermal acid generating compound taught, let alone the specific thermal acid generating compound required by claim 1, i.e., 2-hydroxycyclohexyl toluenesulfonate. Thus, claim 1 is not anticipated by Pavelchek on this second and independent ground.

For the reasons set forth above, claim 1 is novel over Pavelchek. By the same token, claims 2 and 6-15, all of which depend from claim 1, are also novel over this reference.

The Examiner further rejects (1) claims 16-19 as anticipated by Hwang et al., Polymer, Vol. 41, 2000, 6691-6694 (Hwang), (2) claims 16-21 as anticipated by Jung et al, U.S., Patent 7,108,957, and (3) claims 16-21 as anticipated by Jung et al, U.S. Patent 7,175,974.

For the sole purpose of moving this application forward, Applicants have cancelled claims 16-21.

Rejection under 35 U.S.C. § 103

The Examiner rejects claims 1-3 and 5-18 as obvious over Hwang in view of Pavelchek. Claims 16-18 have been cancelled. Again, claim 1 will be discussed first.

As pointed out above, claim 1 requires both an anthracene-containing polymer and polyvinylphenol.

Hwang teaches a bottom antireflective coating containing a crosslinking agent, a light absorbing agent, and a thermal acid generator. The light absorbing agent is polyvinylphenol.

The Examiner correctly points out that Hwang does not teach use of the light absorbing agent recited in claim 1, i.e., an anthracene-containing polymer. See the Office Action, page 6, line 19. However, he asserts that “it would have been obvious to one skilled in the art to use Pavelchek’s polymer of Example 1 [i.e., the same as the light absorbing agent recited in claim 1] in Hwang’s anti-reflective coating composition, which is used in deep UV applications, in order to absorb reflections in the deep UV range as taught by Pavelchek.” See the Office Action, page 7, lines 4-7.

As mentioned above, Pavelchek teaches an antireflective composition containing, among others, a light absorbing agent, i.e., an anthracene-containing polymer or polyvinylphenol. Combining this teaching with those in Hwang, a skilled person would have at most been motivated to modify Hwang’s composition by replacing the light absorbing agent in that composition, i.e., polyvinylphenol, with the light absorbing agent taught in Pavelchek, i.e., an anthracene-containing polymer. As a result, the modified composition would contain an anthracene-containing polymer, but not polyvinylphenol. In other words, the composition thus obtained would be different from the composition of claim 1, which contains both an anthracene-containing polymer and polyvinylphenol. Put differently, a skilled person, in view of Hwang and Pavelchek, would have not been motivated to arrive at the composition of claim 1. Thus, the Examiner has clearly not established a *prima facie* case of obviousness based on the two cited references.

Applicants would like to point out that even if the *prima facie* case of obviousness has been established (which Applicants do not concede), it can be successfully rebutted by the unexpected results described in the Specification. More specifically, Table 1 in the Specification (page 16) shows that three compositions covered by claim 1, which contains both polyvinylphenol and an anthracene-containing polymer, exhibited a good pattern, while three comparative compositions containing only an anthracene-containing polymer, but not polyvinylphenol, exhibited a collapsed pattern. Given these unexpected results, any *prima facie* obviousness against claim 1, if established, has been successfully rebutted.

For the reasons set forth above, claim 1 is not rendered obvious by Hwang and Pavelchek. By the same token, claims 2, 3, and 6-15, all dependent from claim 1, are also not rendered obvious by these two references.

**Double-patenting rejection**

The Examiner rejects claims 16-21 for obviousness-type double-patenting relying on claims 6-13 of U.S. Patent 7,205,089.

For the sole purpose of moving this application forward, Applicants have cancelled claims 16-21.

**CONCLUSION**

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

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Respectfully submitted,

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